REMARKS

Claims 3, 8-15, 17 and 18 are pending in the application. Claim 3 has been amended to incorporate all the limitations of claim 1. Claim 14 has been amended to correct the antecedent basis. Claims 1, 2, 4-7, 16, 19 and 20 have been canceled. Applicants submit that no new matter has been added to the application by the Amendment.

Applicants respectfully request that the Amendment After Final be entered in accordance with 37 CFR §116 and MPEP 714.13 since the Amendment places the application in condition for allowance.

Rejection - 35 U.S.C. § 103

The Examiner rejected claims 1, 2, 4-10, 12, 13 and 15-18 under 35 U.S.C. § 103(a) as being unpatentable over the acknowledged prior art (i.e., the disclosed figure 14) further considered with U.S. Patent No. 6,399,932 B1 (Wals).

Wals discloses an optical scanning device for providing a high quality light spot for scanning high density optical carriers. The device uses a first detection system which detects the intensity profile of a reflected beam before the image of the spot and a second detection system which detects the intensity profile of the reflected beam after the image of the spot. The outputs of the first and second detection systems (i.e. the detectors) are combined to provide a spherical aberration signal S_{A40} and a focus error signal S_{A20}.

In respect to claim 8, the equation at col. 6, lines 45-48, describes the generation of a normalized focus error signal S_{A20} according to a first embodiment. In the first embodiment, an array of detectors of the type described by Fig. 4 and col. 5, lines 28-36 is used for both the first detection system and for the second detection system. As described at col. 5, lines 52-67, the spherical aberration in the reflected beam is linearly related to difference signals from the detectors as expressed by the equation at col. 6, lines 45-48. As can be seen, each term in the equation is a difference between an output of a detector in the first detection system and the output of a corresponding detector in the second detector system. Each term of the equation is also normalized by the sum of the detector outputs whose differences are being taken.

In the equation at col. 7, lines 31-34, which describes an alternate method for generating a normalized focus error signal S_{A20} according to a second embodiment. Arrays of detectors of the type shown in Fig. 5 and described at col. 7, lines 7-12 are used in the second embodiment.

Similarly to the first embodiment, the equation is a difference between an output of the sum of two detectors in the first detection system and the output of a sum of corresponding two detectors in the second detector system. The terms in the equation are also normalized by the sum of the detector outputs whose differences are being taken.

The equation at col. 8, lines 50-53, describes another alternate method for generating a normalized focus error signal S_{A20}. Arrays of detectors of the type shown in Fig. 6 and described at col. 7, lines 9-39 are used. Similarly to the first and second embodiments, the equation is a difference between an output of the sum of two detectors in the first detection system and the output of a sum of corresponding two detectors in the second detector system. The terms in the equation are also normalized by the sum of the detector outputs whose differences are being taken.

Amended claim 8 recites, *inter alia*,

> *An optical disc drive ..., comprising:*
>
> *a first measuring section for measuring amplitude of the first focus signal to generate a first amplitude signal;*
>
> *a second measuring section for measuring amplitude of the second focus signal to generate a second amplitude signal;*
>
> *a first normalizing section for generating a first normalized signal by normalizing the first focus signal based on the first amplitude signal;*
>
> *a second normalizing section for generating a second normalized signal by normalizing the second focus signal based on the second amplitude signal; and*
>
> *a detecting section for generating a spherical aberration signal based on the first normalized signal and the second normalized signal according to a quantity of spherical aberration produced at a focusing position of the light.*

Claim 8 recites normalizing first and second focus signals with an amplitude signal that is based respectively on the respective first and second focus signals. The advantage of such type of normalization as described at paragraph [0147] of the application is that the spherical aberration signal can be maintained at a constant value without being affected by defocusing.

Wals does not teach or suggest normalizing first and second focus signals nor does Wals teach or suggest normalizing a focus error signal with an amplitude signal based on the first and second focus signals.

As clearly expressed by the above equations, the normalizing which is taught by Wals is the normalizing of the separate difference signals from the detector arrays and not normalization of the focus signals themselves.

Further, the normalizing functions used by Wals are functions that represent a summation of the respective detector outputs and not an amplitude of the first or the second focus signal.

A normalizing function based on the first and second focus signals requires that the function utilize the focus signal itself as a basis. Thus, for example, the normalizing function might be the absolute value of the focus error signal | SA20 | or for example, the function described at paragraphs [0135] to [0140] and shown at Figs. 9 and 10 of the application. Such function is not taught or suggested by Wals.

Applicants submit that the combination of admitted prior art and Wals does not make claim 8 obvious. Accordingly, for all the above reasons, Applicants respectfully request reconsideration and withdrawal of the § 103 rejection of claim 8.

Claim 17 is allowable for the same reasons that claim 8 is allowable.

Further, it is respectfully submitted that since claim 8 has been shown to be allowable, claims 9-11 dependent on claim 8 are allowable, at least by their dependency. Accordingly, for all the above reasons, Applicants respectfully request reconsideration and withdrawal of the § 103 rejection of claims 9-11 and 17.

Claim 12 recites, inter alia,

> *An optical disc drive ... comprising: ...*
>
> *a light-receiving section for receiving the light reflected by the information storage layer to generate a detection signal;*
>
> *a light quantity detecting section for generating a light quantity signal based on the detection signal according to a total quantity of the light; and*

a normalized aberration detecting section for normalizing the spherical aberration signal based on the light quantity signal to generate a normalized spherical aberration signal.

Claim 12 recites that normalizing the spherical aberration signal with a signal based on a total amount of [reflected] light. The advantage of this claimed feature is that the spherical aberration signal is independent of whether a recorded or an unrecorded area is being read.

In respect to claim 12, Wals describes the generation of a spherical aberration signal S_{A40} with equations at col. 6, col. 7 and col. 8. Each of these equations includes a normalizing of the individual components that are used to generate the spherical aberration signal S_{A40}. Accordingly, as discussed above, Wals does not normalize the spherical aberration signal itself but only the component inputs that are used to generate the spherical aberration signal.

Further, none of the individual denominators in the equations that represent the spherical aberration signal include the output of detectors that would provide the detection of a total quantity of light.

Claim 12 requires that the spherical aberration signal itself be normalized and that normalization be accomplished with a signal that represents a total quantity of light as for example shown at Figs. 11 and 12 of the application.

Applicants submit that the combination of admitted prior art and Wals does not make claim 12 obvious. Accordingly, for all the above reasons, Applicants respectfully request reconsideration and withdrawal of the § 103 rejection of claim 12.

Claim 18 is allowable for the same reasons that claim 12 is allowable.

Further, it is respectfully submitted that since claim 12 has been shown to be allowable, claims 13-15 dependent on claim 12 are allowable, at least by their dependency. Accordingly, for all the above reasons, Applicants respectfully request reconsideration and withdrawal of the § 103 rejection of claims 13-15 and 18.

Conclusion

Insofar as the Examiner's rejections to claims 3 and 8-15, 17 and 18 have been fully addressed, the instant application is in condition for allowance. Withdrawal of the Final

Rejection, formal entry of the present "Amendment After Final," and issuance of a Notice of Allowability is therefore earnestly solicited.

Respectfully submitted,

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